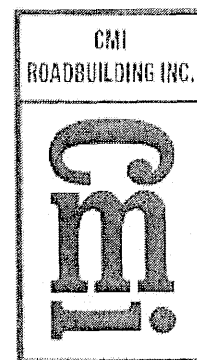
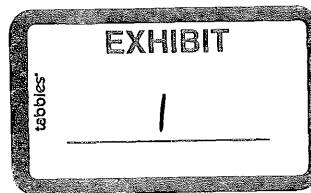


12th March 2020

Amaazz Construction
545 Metro Place South
Suite 201
Dublin 43017
Ohio



RE: CMI Magnum 250 Counterflow Drum-Mix Proposal no P192283 Rev 3

SUBJECT: SALES AGREEMENT 23144

CMI Roadbuilding Inc is pleased to provide our contract for one (1) CMI Magnum 250 super portable 250tph counterflow drum-mix as described and listed herein (the "Agreement"). This document shall summarize and supersede all agreements and understandings between our two companies. Reference in this Agreement to Purchaser or Buyer refers to Amaazz Construction and references to Seller refers to CMI Roadbuilding Inc.

SUMMARY OF ITEMS AND EQUIPMENT DESCRIPTIONS CONTAINED IN THIS DOCUMENT:

- | | |
|--------|---------------------------------------------------------------|
| Item 1 | Portable Four (4) compartment aggregate feed system |
| Item 2 | Portable Magnum 250 counterflow drum-mix & burner |
| Item 3 | Portable RA318 Roto-Aire baghouse |
| Item 4 | Portable AC storage system |
| Item 5 | Portable 60 ton SE60 self-erect mixed material storage system |
| Item 6 | Portable PRB-120 RAP feed system & rolls breaker |
| Item 7 | Portable control house/ motor control center & Impulse III |
| Item 8 | Wiring |

TOTAL NET PRICE FCA POINT OF ORIGIN

\$ 2,625,000.00

Cedarapids

WWW.CMI-ROADBUILDING.COM

CMI ROADBUILDING INC.
315 HUDIBURG CIRCLE
OKLAHOMA CITY
OK 73108, U.S.A.
T: 1-800-994-1735
E: sales@cml-roadbuilding.com


12th March 2020 Magnum 250 Super Portable Counterflow Drum-Mix Specification 23144

CMI ROADBUILDING Representative Signature & Title

DATE _____

CMI ROADBUILDING Acceptance Signature & Title

DATE _____


BUYER Signature & Title

DATE 3-16-2020

MOTOR POWER LIST

See attached

EXCLUSIONS

See appendix 1 attached

All prices quoted do not include any applicable taxes

PAYMENT TERMS

20% non-refundable down payment due with signed order required to activate the order.

Balance due when equipment is ready to ship

VALIDITY


Prices firm for 30 days from date of this quotation

TERMS OF SALE

See attached

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12th March 2020 *Magnum 250 Super Portable Counterflow Drum-Mix Specification* 23144

MAGNUM 250

TECHNICAL DESCRIPTION

250 TPH SUPER PORTABLE COUNTERFLOW DRUM-MIX

PLANT CAPACITY

250 tons per hour based on a temperature of 300° F from drum-mix discharge. **Capable of up to 30% RAP.** Average moisture content of 5% and including 5% bitumen in the mix.

Assuming the following conditions : -

- 1) 100% Plant utilisation
- 2) Ambient temperature 70°F
- 3) Altitude at sea level
- 4) Average moisture content is for surface moisture only
- 5) Free-flowing filler, density 70 lb/ft³
- 6) Single sized aggregate with max. lump 1½ in , density 100 lb/ft³
- 7) Mix recipe with no excessive proportion of one size
- 8) Feed to contain a maximum of 20% minus #8 Sieve (0-0.093")
- 9) Fuel oil calorific value of 138,000 Btu/gallon
- 10) Gas calorific value of 1,040 Btu/ft³
- 11) Liquid propane calorific value of 91,044 Btu/gallon
- 12) Capacities include filler and bitumen
- 13) Aggregate is non-porous and not excessively flaky

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1 PORTABLE FOUR (4) COMPARTMENT AGGREGATE FEED SYSTEM

1.1 HOPPERS

Hoppers	-	One four (4) compartment steep sided hopper unit
Thickness	-	3/16"
Capacity	-	20 ton heaped
Loading width	-	13'
Vibrator	-	0.75 hp
Guards	-	Removable guards installed on non-feed side and each end of hopper structure to 7' above grade

1.2 BELT FEEDERS

Feeders	-	Four (4) variable speed
Capacity	-	240 tph (each)
Size	-	24" wide x 9' 5" centres
Gate	-	For manual adjustment and calibration
Belt	-	24" wide 3 ply with vulcanised joint
Idlers	-	20° troughed
Head drum	-	Steel construction with rubber lagged face
Tail drum	-	Steel construction, self-cleaning
Belt tensioning	-	Via tension bolts fitted to tail drum slide bearings
Drive	-	5 hp with AC variable frequency inverter to vary feeder output
Starvation switches	-	Fitted to each feeder with indication on Impulse III control system in the event of no-flow

1.3 GATHERING CONVEYOR

Gathering conveyor	-	Mounted under feeders with head section to weigh feed conveyor scalping screen
Belt	-	30" wide 3 ply with vulcanised joint
Idlers	-	40° troughed bolted to steel section support frame

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Head drum	-	Steel construction with rubber lagged face
Tail drum	-	Steel construction, self-cleaning
Drive	-	10 hp
Belt scraper	-	Belt scraper fitted at head drum
Belt tensioning	-	Via tension bolts fitted to tail drum slide bearings
Guards	-	To 7' above grade
Emergency grab wire	-	Fitted full length one side to 7' above grade

1.4 SCALPING SCREEN

Size	-	3' wide x 6' long single deck
Screen mesh	-	The screen is supplied with a set of standard woven wire 2" screen meshes
Drive	-	3 hp
Screen under hopper	-	Mounted into the support structure below screen to direct material onto the weigh feed conveyor

1.5 AGGREGATE WEIGH FEED CONVEYOR

Weigh feed conveyor	-	Feeding sized aggregate material from scalping screen discharge to drum mix slinger conveyor
Belt	-	24" wide 3 ply with vulcanised joint
Idlers	-	30° troughed bolted to steel section support frame
Weigh idler	-	Single idler belt scale to record material feed rate via impulse III control system
Wind covers	-	Galvanised wind covers provided over belt weigh idler section for weather protection
Calibration	-	Air actuated pre-load test weight mechanism mounted on weigh idler section to provide instant calibration of belt scale with readout displayed on Impulse III control system
Head drum	-	Steel construction with rubber lagged face
Tail drum	-	Steel construction, self-cleaning

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Drive	-	10 hp
Belt scraper	-	Belt scraper fitted at head drum
Belt tensioning	-	Gravity take-up type
Receiving hopper	-	Conveyor fitted with feed hopper to receive material from scalping screen
Emergency grab wires-		Fitted either side of the conveyor to 7' above grade

1.6 HOPPER DIVIDERS

Dividers	-	Three (3) 2' steel extension dividers fitted between storage hoppers to prevent/ minimise contamination between aggregate hoppers
----------	---	-----------------------------------------------------------------------------------------------------------------------------------

1.7 BULKHEAD

Ramp bulkhead	-	8' steel bulkhead on one side for customer constructed loader ramp
Ramp wings	-	Used in conjunction with bulkhead assembly to contain material at each end

1.8 CHASSIS & RUNNING GEAR

Chassis	-	Fully welded rolled steel construction to support the feed section, gathering conveyor, scalping screen and aggregate weigh feed conveyor
Support jacks	-	Four (4) pairs of manual jacks mounted to the chassis
	-	Two (2) independent manual jacks mounted to the rear of the chassis
	-	One (1) pair of independent hinged screw jacks mounted to the front of the chassis
Support pads	-	Four (4) full width chassis support pad assemblies to distribute load evenly

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Running gear - Triple rear axle with pneumatic tired twin wheels, running gear, dual-line air braking system and upper fifth wheel kingpin

2 PORTABLE MAGNUM 250 COUNTERFLOW DRUM-MIX & BURNER

2.1 SLINGER CONVEYOR

Slinger conveyor - Mounted on chassis

Calibration - Slinger conveyor is reversible to facilitate calibration of the aggregate weigh feed conveyor belt scale

Belt - 24" wide heat resistant belt with vulcanised joint

Idlers - 20° troughed bolted to steel section support frame

Head drum - Steel construction with recessed flange bearings

Tail drum - Steel construction, self-cleaning

Drive - 5 hp

Belt scraper - Belt scraper fitted at head drum

Belt scraper shield - Protective belt scraper shield fitted to front of scraper to provide an air gap to protect scraper from drum heat

Belt tensioning - Via tension bolts fitted to tail drum slide bearings

Access platform - Slinger access platform mounted on one side of the slinger conveyor with handrailing, kick strip and vertical access ladder

2.2 COUNTERFLOW DRUM-MIX

Magnum - Two zone; drying/mixing

Diameter - 7'

Overall Length - 38' 3/8"

Shell construction - 5/16" A514B T-1A alloy steel throughout

Liners - Liners fitted in critical wear areas

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- | | | |
|---------------------|---|----------------------------------------------------------------------------------------------------------------------------------|
| Lifter flights | - | Bolt-in replaceable 1/4" steel plate |
| Mixing flights | - | Bolt-in replaceable 1/4" A514B T-1A folded alloy steel plate |
| Exhaust breaching | - | Fabricated in 3/16" A36 plate suitably braced with access hatch and feed opening for slinger conveyor |
| Discharge breaching | - | Fabricated in 3/16" and 1/4" A36 plate suitably braced with burner inlet and discharge chute |
| RAP Inlet chute | - | Top entry RAP collar inlet chute located at the beginning of the RAP zone with 1/4" A514B T-1A alloy steel liner plate. |
| RAP by-pass | - | RAP collar inlet chute has pneumatically operated by-pass facility for calibration of the RAP feed material |
| Seals | - | High temperature flexible seals running on bands installed on shell contact surfaces for RAP collar and breach housing |
| Tires | - | Forged steel and machined on all faces supported on mounting blocks |
| Trunnion rollers | - | Four (4) machined steel 17" dia x 10" wide, running on shafts mounted in pillow block bearings supported on the drum-mix chassis |
| Thrust rollers | - | 12" dia x 2 1/2" thick mounted in pillow block bearings bolted to chassis |
| Insulation | - | 2" thick high density mineral wool with stainless steel cladding |
| Drive | - | Four (4) 25 hp direct drive through each independent trunnion roller |

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2.3 DRUM MIX THERMOCOUPLE

Thermocouple - Shielded thermocouple mounted in drum discharge chute to record mix discharge temperature and display via Impulse III control system

2.4 ASPHALT PROPORTIONING

Variable speed pump - 3" Viking jacketed pump with AC variable frequency drive, strainer and Micro Motion mass flow meter. Calibration valve, sample valve and positive flow switch are included

Pump capacity - 90 gpm

Drive - 15 hp

2.5 FINES INJECT AUGER

Inject auger - Installed through discharge breeching end of drum to return fines from baghouse or mineral filler to drum mixing zone

Drive - 5 hp

2.6 AC INJECTION

AC injection - Via fixed 3" AC line adjacent to fines inject auger

2.7 BURNER

Type - STARJET SJ-520 allows liquid fuels

Capacity - 96.8 MMbtu/hr

Primary fuel - #2 fuel oil

Turbo blower - 100 hp

Burner control - Via Impulse III control system which monitors drum material discharge temperature and regulates

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- burner air/ fuel ratios to achieve preset discharge temperatures automatically
- Ignition - Gas pilot (gas supply by customer)
- Fuel pump - 1.5 hp

2.8 COLD AIR BLEED DOOR

- Bleed door - Positioned in the drum exhaust breeching to allow quenching of exhaust gas temperature when producing open graded mixes via an electrically actuated bleed door

2.9 CHASSIS & RUNNING GEAR

- Chassis - Fully welded rolled steel construction to support the drum-mix, slinger feed conveyor, end breechings, RAP collar and burner assembly
- Support jacks - Four (4) pairs of manual jacks mounted to the chassis
- Support pads - Four (4) full width chassis support pad assemblies to distribute load evenly
- Running gear - Triple rear axle with pneumatic tired twin wheels, running gear, dual-line air braking system and upper fifth wheel kingpin

3 PORTABLE RA318 ROTO-AIRE BAGHOUSE

3.1 PRIMARY DUST

- First stage - Inertial dust collector
- Discharge chute - Collected heavy fines from inertial dust collector are fed via discharge chute to the baghouse trough hopper augers

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3.2 SECONDARY DUST

CAPACITY - **48,000 ACFM**

3.3 SECOND STAGE

Second stage - Roto-Aire reverse air cleaning type bag filter
 Filter medium - Aramid 14 oz/sq yd (**702 bags**)
 Filter area - **10,740 sq ft**
 Air to cloth ratio - **4.5 : 1**
 Temperature - Maximum operating temperature 375°F
 Particulate emission - Less than 0.04 gr/dscf provided the filter is maintained in accordance with our operating instructions

3.4 FILTER CABINET

Filter cabinet - Fabricated from 3/16" steel plate mounted on a trough hopper
 Plenum plate - 3/16" steel plate
 Cabinet top access - Via vertical caged ladder with handrailing and kick strip mounted around top of filter cabinet

3.5 CLEANING

Cleaning mechanism - Three (3) Roto Step reverse induced air mechanisms. During cleaning sequence, the mechanism opens a small number of bags to atmosphere for a short duration, to allow the exhaust fan to induce a reverse flow of air for bag cleaning.
 Drive - Three (3) 0.5 hp

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3.6 TROUGH HOPPER

- Trough hopper - Fabricated in 3/16" steel plate
- Hopper augers - Two (2) 16" dia augers deliver fines to cross auger
- Drive - Two (2) 7.5 hp
- Cross auger - 12" dia cross auger delivers fines to heavy and fines return auger
- Drive - 5 hp
- Level indicator - High level indicator with high level alarm signal on Impulse III control system
- Rotation sensors - Fitted to hopper augers and cross auger for the monitoring of auger rotation sequenced with Impulse III control system

3.7 FAN UNIT

- Fan unit - Backward inclined centrifugal
- Drive - 150 hp motor via v-belts
- Exhaust stack - Fabricated in 3/16" steel plate with test sockets and height of 20'

3.8 DUCTING

- Ducting - All interconnecting ducting included
- Drum-Mix to filter - Fixed to drum exhaust breeching
- Filter to exhaust fan - Transition to fan housing
- Test access - Via filter cabinet top to exhaust stack test points

3.9 AIR VOLUME CONTROL

- Inverter/ VFD - 150 hp inverter automatically varies air volume through plant via a transducer monitoring drum pressure
- Indication - Inverter speed and drum pressure controlled via impulse III control system

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3.10 BAG PROTECTION

- | | | |
|----------------|---|-------------------------------------------------------------------------------------------------------------------|
| Bag protection | - | Two (2) temperature probes fitted in the ducting prior to the baghouse to protect bags from high gas temperatures |
| Indication | - | Vacuum gauge provided to indicate pressure drop across the bag filter and control the filter cleaning system |

3.11 SLAM DAMPER

- | | | |
|------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Damper assembly | - | Pneumatically operated damper assembly positioned in main ducting prior to the primary dust inlet |
| High temperature | - | Isolation damper blades automatically close when activated by temperature (probe 1) with high temperature alarm on Impulse III control system |
| Burner shut-off | - | Temperature (probe 2) acts as a back-up to (probe 1) and in the event that high temperature is still recorded, will shut off the burner automatically sequenced with the Impulse III control system |

3.12 CHASSIS & RUNNING GEAR

- | | | |
|---------------|---|-----------------------------------------------------------------------------------------------------------------------------|
| Chassis | - | Fully welded rolled steel construction to support the filter and fan unit |
| Support jacks | - | Four (4) independent manual jacks mounted to the front and rear of the hopper to facilitate erecting the baghouse |
| Running gear | - | Triple rear axle with pneumatic tired twin wheels, running gear, dual-line air braking system and upper fifth wheel kingpin |

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3.13 HEAVY & FINES RETURN AUGER

- | | | |
|-----------------|---|-----------------------------------------------------------------------------------------------------------------------|
| Auger | - | 14" dia high lift auger transfers combined heavy fines and fines from baghouse cross auger to drum-mix inject auger |
| Drive | - | 10 hp |
| Rotation sensor | - | Fitted to heavy and fines return auger for the monitoring of auger rotation sequenced with Impulse III control system |
| Support | - | Auger support stand |

4 PORTABLE AC STORAGE SYSTEM

4.1 HORIZONTAL THERMAL OIL HEATED TANK

- | | | |
|---------------------|---|---------------------------------------------------------------------------------------------------------------------------------------|
| Tank | - | One (1) horizontal |
| Capacity | - | 30,000 gallon |
| Tank body | - | 10' 6" diameter cylindrical section single compartment shell fabricated from 1/4" S275 (A570 Grade 40) plate, all welded construction |
| Fill inlet | - | 3" flanged |
| Supply outlet | - | 3" flanged |
| Return inlet | - | 3" flanged |
| Drain outlet | - | 4" flanged |
| Vent/overflow | - | 4" vent/overflow pipe mounted inside the tank |
| Heating tubes | - | 2" Internal thermal oil heating heat coil with hot oil supply from an external heat exchange unit |
| Temperature control | - | Indicating type temperature control with drywell socket wired to thermal oil solenoid |
| Contents gauge | - | Pressure transducer with digital display |
| High level switch | - | Sends warning signal to local alarm |
| Inspection hatches | - | Two (2) 24" inspection hatches secured by bolt fixing |

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- Hatch access - Tank mounted ladders to access hatches at fill end of the tank
- Chassis platform - Chassis platform accessed via ladder fitted to chassis

4.2 INSULATION & CLADDING

- Cylinder and ends - 4" high density mineral wool
- Cladding - Stucco embossed aluminium cladding

4.3 AC SUPPLY SYSTEM

- Unload pump - 3" positive displacement pump with thermal oil jacket and pressure relief valve. Pump mounted on chassis frame and connected to 3" fill inlet via jacketed pipework and flex line jumpers
- Capacity - 200 GPM
- Drive - 15 hp
- Valve - 3" Three (3) way valve for supply, return and unloading pump

4.4 PIPEWORK & VALVES

- Pipework and valves - 3" jacketed piping between metering pump and drum, along with pump supply and return piping with plug and 3-way valve to connect primary with future AC storage tanks

4.5 HEAT EXCHANGE UNIT

- Heat exchanger - 1,227,000 Btu/hr (310,000 Kcal/hr) heat exchange unit, mono-tubular, efficiency up to 90%
- Chamber - Insulated heat chamber with galvanised steel cladding
- Insulation - 4" on shell and 6" on ends

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- | | | |
|---------------------|---|-----------------------------------------------------------------|
| Burner | - | Fully automatic gas oil burner, fuel viscosity 200 SSU @ 100° F |
| Drive | - | 0.75 hp |
| Circulation pump | - | Centrifugal pump with mechanical seal |
| Pump capacity | - | 120 gpm |
| Drive | - | 5 hp |
| Expansion tank | - | 150 gallon with level gauge and shutoff |
| Heat Transfer Fluid | - | 95 gallons required |
| Tank outlet | - | Outlet flange at the lowest point to facilitate cleaning |
| Exhaust stack | - | Hinged for shipping, including rain cap |

4.6 CONTROLS

- | | | |
|----------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Control panel | - | Unit mounted, fully enclosed weather proof control panel, 460v, 60 Hz, 3 phase and neutral. Complete with mains isolator, contactors and overloads |
| Controls | - | Fully automatic controls incorporating:-
Starters for oil pump and burner
Flame failure burner control
High limit cut-off
7 day timer |
| Safety control | - | Thermostatically controlled high oil temperature cut-off, pump pressure switch to avoid over heating if circulation fails and pump timer to stop circulation if burner fails |

4.7 CHASSIS & RUNNING GEAR

- | | | |
|---------------|---|---------------------------------------------------------------------------|
| Chassis | - | Tank mounted on a gooseneck single frame structural steel section chassis |
| Support jacks | - | Eight (8) manual jacks mounted to the chassis |

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- | | | |
|--------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Support pads | - | Four (4) full width chassis support pads assemblies to distribute load evenly |
| Running gear | - | Triple rear axle with pneumatic tired twin wheels, mechanical suspension running gear, dual-line air braking system and upper fifth wheel kingpin |

5 PORTABLE 60 TON SELF-ERECT MIXED MATERIAL STORAGE

5.1 DRAG SLAT CONVEYOR

- | | | |
|------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drag slat | - | Totally enclosed, fitted to mixed material storage silo with pivot mounted to portable support structure to provide a pivot point when erecting the drag slat and storage silo together into working position via hydraulic erect system |
| Slat conveyor | - | 36" wide x 36" deep x 50' centres |
| Capacity | - | Up to 350 tph |
| Slats | - | Hard surfaced bolt on slats mounted on chain attachments with full welded bolts |
| Chain | - | Dual, 4" heavy-duty steel roller chains with hardened rollers and pins with heat treated side bars |
| Head shaft | - | Steel shaft with segmented sprockets |
| Tail shaft | - | Steel shaft with traction wheels |
| Chain tensioning | - | Via tension bolts fitted to tail shaft slide bearings |
| Drive | - | Direct via shaft mounted speed reducer unit driven by 50 hp motor |
| Idler rollers | - | 10 3/4" dia drag chain idler rollers, adjustable spring-loaded hold down style |
| Casing | - | Fabricated in 1/4" steel plate with chrome carbide steel floor plate |
| Side wear liners | - | Abrasion resistant wear liners fitted to each side of the casing |

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- | | | |
|------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chop Gate | - | Pneumatically operated chop gate located in conveyor floor with discharge chute for reject material |
| Covers | - | Hinged top covers for ease of inspection and maintenance |
| Rotation sensor | - | Fitted to drag slat conveyor tail shaft for the monitoring of conveyor rotation sequenced with Impulse III control system |
| Mid-level access | - | Via galvanized vertical cage ladder to silo mid-level platform with handrailing and kick strip to access silo load cells and discharge doors |
| Silo top access | - | Via galvanized vertical cage ladder from silo mid-level platform to silo top with handrailing and kick strip to access silo batcher and drag slat drive components |

5.2 MIXED MATERIAL BATCHER ASSEMBLY

- | | | |
|-------------------|---|-----------------------------------------------------------------------------------------------|
| Batch hopper | - | Hopper supported from head section of drag slat conveyor fabricated from 1/4" A36 steel plate |
| Batch control | - | Via preset batch size for automatic mixed material batching into storage silo |
| Ultimate limit | - | Independent ultimate limit switch sequenced with Impulse III control system |
| Batcher discharge | - | Direct into storage silo via two (2) pneumatically operated radial doors |

5.3 60 TON MIXED MATERIAL STORAGE SILO

- | | | |
|--------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Storage silo | - | Cylindrical silo fabricated from 1/4" A36 steel plate mounted in portable support structure with adjustable mounts and travel lock assemblies |
| Capacity | - | 60 tons storage based on a density of 120 lbs cu ft |
| Load cells | - | Three (3) |

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- Silo insulation - 4" high density mineral wool fitted under storage silo top deck and 2" high density mineral wool on silo sides with galvanized steel cladding
- Silo inlet - Via pneumatically operated, insulated sliding silo inlet door
- Door limit switch - Limit switch fitted to prove open position of silo inlet door, sequenced with Impulse III control system
- Silo outlet cone - Fabricated from 3/8"A36 steel plate
- Silo discharge - Via two (2) pneumatically operated radial doors
- Door heating - Discharge doors heated via electrical heating elements in thermal oil with expansion chambers
- Silo level indication - High-level rotary indicator with high-level alarm sequenced with Impulse III control system
- Calibration brackets - Load cell calibration brackets welded to storage silo for supporting test weights when calibrating load cells
- Transit supports - Provided to protect load cells during transit

5.4 HYDRAULIC ERECT

- Hydraulic cylinders - Two (2) heavy duty hydraulic cylinders mounted to chassis and drag slat to raise both the drag slat and storage silo together into their working position
- Power unit - Self-contained, chassis mounted gasoline powered hydraulic power unit

5.5 COMPRESSOR & PNEUMATICS

- Compressor - 15 hp with 90-gallon receiver
- Pneumatics - Solenoid valves, nylon pipework and fittings

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5.6 CHASSIS & RUNNING GEAR

- | | | |
|---------------|---|-----------------------------------------------------------------------------------------------------------------------------|
| Chassis | - | Fully welded rolled steel construction to support the drag slat and storage silo |
| Support jacks | - | Pair of manual jacks mounted to the front of the chassis to facilitate levelling |
| | - | Two (2) independent manual jacks mounted to the rear of the chassis to facilitate levelling |
| Support pads | - | Four (4) chassis support pads mounted on heavy duty adjustable leg assemblies to distribute load evenly |
| Running gear | - | Triple rear axle with pneumatic tired twin wheels, running gear, dual-line air braking system and upper fifth wheel kingpin |

6 PORTABLE PRB-120 RAP FEED SYSTEM & ROLLS BREAKER

6.1 HOPPER

- | | | |
|------------------|---|------------------------------------------------------------------------------------------------------|
| Hopper | - | One (1) compartment steep sided hopper unit |
| Capacity | - | 20 Ton heaped |
| Loading width | - | 14' |
| Hopper grid | - | Oversize material grid fitted at hopper top opening to prevent oversize material entering the hopper |
| Vibrator | - | 0.75 hp |
| Pneumatic cannon | - | Blockage breaking system fitted on hopper with timers and controls |
| Guards | - | Removable guards installed on non-feed side and each end of hopper structure to 7' above grade |

6.2 RAP INCLINED BELT FEEDER

- | | | |
|----------|---|------------------------------------------------------------------------------------------|
| Feeder | - | One (1) inclined variable speed belt feeder feeding RAP material in to RAP rolls breaker |
| Capacity | - | 300 tph |

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Size	-	30" wide x 10' 2" centres
Gate	-	For manual adjustment and calibration
Belt	-	30" wide, 3 ply with clipped joint
Idlers	-	Flat, bolted to steel section support frame
Head drum	-	Steel construction with rubber lagged face
Tail drum	-	Steel construction, self-cleaning
Drive	-	5 hp with AC variable frequency inverter to vary feeder output
Belt tensioning	-	Via tension bolts fitted to tail drum slide bearings
Starvation switches	-	Fitted to each feeder with indication on Impulse III control system in the event of no-flow

6.3 RAP ROLLS BREAKER

Rolls breaker	-	18" wide x 24" long tandem rolls breaker with 1.5" perforations for RAP crushing/ sizing
Drive	-	30 hp
Breaker under hopper	-	Mounted below rolls breaker to direct material onto the RAP weigh feed conveyor

6.4 RAP WEIGH FEED CONVEYOR

Weigh feed conveyor	-	Feeding sized RAP material from RAP rolls breaker discharge to drum mix RAP collar inlet chute
Belt	-	24" wide 3 ply with vulcanised joint
Idlers	-	20° troughed bolted to steel section support frame
Weigh idler	-	Single idler belt scale to record material feed rate via Impulse III control system
Wind covers	-	Galvanised wind covers provided over belt weigh idler section for weather protection
Head drum	-	Steel construction with rubber lagged face
Tail drum-	-	Steel construction, self-cleaning
Drive	-	7.5 hp

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- Belt scraper - Belt scraper fitted at head drum
- Belt tensioning - Gravity take-up type
- Receiving hopper - Conveyor fitted with feed hopper to receive RAP material from RAP rolls breaker
- Guards - To 7' above grade
- Emergency grab wire - Fitted full length both sides to 7' above grade

6.5 HYDRAULIC ERECT

- Hydraulic erect - Hydraulic cylinder actuated via manual lever valves provide erecting of the conveyor to desired height. Powered via quick disconnects by the portable hydraulic power unit

6.6 CHASSIS & RUNNING GEAR

- Chassis - Fully welded rolled steel construction to support the RAP feed section, rolls breaker and weigh feed conveyor
- Support jacks - One (1) pair of manual jacks mounted to the front of the chassis
- Support legs - One (1) pair of independent hinged support legs mounted to the rear of the chassis
- Running gear - Single rear axle with pneumatic tired twin wheels, running gear, dual-line air braking system and upper fifth wheel kingpin

7 PORTABLE CONTROL HOUSE/ MOTOR CONTROL CENTER

7.1 CONTROL HOUSE

- Size - 24' long x 10' wide
- Base frame - Constructed from rolled steel section

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Construction	-	Steel panels fitted between rolled steel sections with plastic coated exterior finish
Roof	-	Sheet steel construction with, insulated with 6" encapsulated rockfibre
Floor	-	Wooden floor with steel bracings, covered with heavy-duty floor tiles, insulated with 4" rockfibre slab, foil faced both sides
Walls	-	Clad internally with decorative boarding, insulated with 2" rockfibre slab, foil faced both sides
Room divider	-	Internal partition insulated with 2" rockfibre slab, foil faced both sides with internal door between control section and motor control section
Windows	-	Three sides double-glazed, operators end of control house
Ticket window	-	Double sliding, glazed window on one side to allow manual issuing of tickets
Lighting	-	Overhead LED panel lights fitted per room
HVAC	-	Two (2) zonal heating and air conditioning units, one (1) per room
Power	-	Six (6) quad socket outlets and Three (3) double socket outlets
External doors	-	Via steel access doors
Access	-	Via galvanized stairway and platform with handrailing and kick strip

7.2 MOTOR CONTROLS (Located in MCC room)

Motor panel	-	With main line disconnect, transformer and all switchgear interconnect wiring to control console
Contactors	-	Combination circuit breakers/contactors
Standards	-	UL and CSA approved

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7.3 IMPULSE III CONTROL & MANAGEMENT SYSTEM

Control system - User friendly Plant Control and Management
SCADA control system on Windows operating
system consisting of the following: -

Industrial Fanless Intel i5 4 core Embedded
Computer (minimum spec) running Windows 10
IoT with SATA III SSD. Vibration and temperature
tolerant from -4 to 158F (-20 to 70C)
Two (2) high resolution 24" widescreen DisplayPort
monitors allow for control functions to be operated
by optical mouse and keyboard while
simultaneously displaying plant operations on
second screen.

Battery back-up for uninterruptible power supply
(UPS) to protect the PC from power spikes etc.
Rockwell Compact Logix software and licenses
Impulse III software

Fully integrated Burner control
Rockwell Compact Logix PLC racks with processor
and I/O cards
Laser printer
Interconnecting communication cables
Impulse III PLC uses PID (Proportional-Integral-
Derivative) process control of the material drives to
ensure continual accuracy of the blend during a
mix.

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Characteristics	-	<p>Features of Impulse III include</p> <ul style="list-style-type: none"> • Step by step calibration of all metering parameters • Diagnostic trouble shooting screens • Ethernet communications between PC, PLC and VFD motor controllers • Automatic proportioning of all materials • Automatic sequence start up and shut down • Motor start / stop for manual control of motors • Safety interlocks • Automatic burner control • Automatic bag house cleaning and airflow control • Automatic mix changes in process • Automatic divert mix to another silo when changing mixes • Plant graphics color display with user friendly animation • Display real time status and values of plant operation • Pre-configured to match actual plant configuration • Plant operator virtual training in simulation • Remote diagnostics and updates via the web • Spoken Alarms announced in English with comprehensive alarm logging
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7.4 LOADOUT SYSTEM

Loadout	-	<p>Silo load out PC based control system comprising of:</p> <p>Standard tower PC Windows 7 professional, 3.2 ghz processor, (1) x 22" flat monitor, AC I/O enclosure,</p>
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- input and output couplers, screw type terminal connections and interface with MicroController module.
- Cardinal 205 digital weight indicator.
- Model 1182 DWI interface module
- OKI Microline 320 turbo printer system
- Software - A highly configurable design allowing producer to add fields, layout printing of delivery tickets, add or modify reports, create database fields, and simple upgrade. Open database architecture provides seamless integration with virtually any office application

7.5 CHASSIS & RUNNING GEAR

- Chassis - Fully welded rolled steel construction to support the split control house/ motor control center
- Support jacks - Two (2) pairs of manual jacks mounted to the front and rear of the chassis
- Running gear - Single rear axle with pneumatic tired twin wheels, running gear, dual-line air braking system and upper fifth wheel kingpin

8 WIRING

SOOW electric cabling provided suitable for plant layout with plug and socket connections to motor control center for quick disconnection and plant relocation.

STEELWORK

All welds to be cleaned as necessary, steelwork to be wire brushed and generally cleaned of all mill scale etc before painting.

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PAINTING

All external surfaces are painted with one-coat single pack zinc phosphate primer, followed by a high build semi-gloss topcoat enamel finish.

Drum, discharge and exhaust breaching painted with black, matte finish high-temperature resistant paint.

Plant to be painted **CMI White (Cream to pattern)**

All guards to be **safety yellow**

All plastic coated steel sheeting to be **Goosewing grey**

VOLTAGE

460 Volt, 3 phase, 60 Hz

MANUALS

We include for two complete sets of operators and maintenance instruction manuals and illustrated spare parts manuals.

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Magnum 250 Drum-Mix Plant Motor List

Item	Quantity	Motor	Starter	hp	Total hp
1.	4	Feeder motors	Inverter	5	20
2.	1	Vibrator	DOL	0.75	0.75
3.	1	Gathering conveyor	DOL	10	10
4.	1	Scalping screen	DOL	3	3
5.	1	Weigh feed conveyor	DOL	10	10
6.	1	Slinger conveyor	DOL fwd/rev	5	5
7.	4	Drum-mix	Soft start	25	100
8.	1	AC pump	Inverter	15	15
9.	1	Fines inject auger	DOL	5	5
10.	1	Burner blower	Inverter	100	100
11.	1	Fuel pump	DOL	1.5	1.5
12.	3	Roto-Step	DOL	0.5	1.5
13.	2	Trough hopper augers	DOL	7.5	15
14.	1	Cross auger	DOL	5	5
15.	1	Exhaust fan	Inverter	150	150
16.	2	Fines return auger	DOL	10	10
17.	1	AC unload pump	DOL Fwd/rev	15	15
18.	1	Heat exchanger	DOL	0.75	0.75
19.	1	Circulating pump	DOL	5	5
20.	1	Drag slat conveyor	DOL	50	50
21.	1	RAP feeder vibrator	DOL	0.75	0.75
22.	1	RAP feeder motor	Inverter	5	5
23.	1	RAP rolls breaker	DOL	30	30
24.	1	RAP weigh conveyor	DOL	7.5	7.5

Total 565.75 hp

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HEATING/OTHER SUPPLIES

25.	1	Control house supply	1 ph + N	18	18
26.	2	HVAC	1 ph + N	3	6

Total 24 kW

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APPENDIX 1

REQUIREMENTS TO BE PROVIDED BY THE BUYER NOT INCLUDED IN THIS PROPOSAL

1. All state or local engineering approvals, certificates as may be required.
2. Any applicable taxes, duties, etc.
3. All freight from point of origin.
4. Necessary permits for EPA, erection, and all others necessary for the operation of the plant.
5. Site preparation, foundation design, footings, anchor bolts and/or necessary blocking to provide support for individual components.
6. Foundations, piers and all necessary ground works
7. Footings, installation, certification and calibration for truck scale, if required.
8. Electrical service and hook up to control center.
9. External main electrical disconnect (if required).
10. Liquid additive system
11. Mineral filler storage system
12. AC calibration tank
13. Fuel storage tank and piping (unless otherwise stated in this proposal).
14. Gas supply for burner pilot.
15. All air piping from air compressor(s).
16. All lubricants, heat transfer oil and hydraulic oil as required.
17. All water pump piping - suction and pressure.
18. Asphalt piping as required, (unless otherwise stated in this proposal).
19. All equipment and labor necessary for the proper erection of the plant. Proper sizing of lifting equipment is purchaser's responsibility.
20. Mechanical and electrical installation and commissioning.
21. Additional requirements necessary to make the equipment operable and not specifically stated in this proposal are the responsibility of the buyer.

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NOTE: THE PERFORMANCE OF THE EQUIPMENT COVERED IN THIS PROPOSAL CANNOT BE EXACTLY PREDICTED FOR EVERY OPERATING CONDITION. IN CONSEQUENCE, ANY PREDICTED PERFORMANCE DATA SUBMITTED ARE INTENDED TO SHOW PROBABLE OPERATING RESULTS WHICH MAY BE CLOSELY APPROXIMATED, BUT WHICH CANNOT BE GUARANTEED

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